Calculating Indoor and Outdoor Water Uses

This appendix describes one method of calculating both indoor and outdoor water uses. In simple terms, this is the residential winter water demand divided by the population served.

Population Served:

Decennial Census data are typically available at least a year or so after the April count day. These data are provided with a high degree of detail. Data should be used to calculate the service population. Service areas usually do not follow jurisdictional lines, so census block data should be considered the best available data point. This service population number can then be expressed as a percent of county (or counties) population. The Decennial Census can also assist in estimating the number of persons using private wells in the service area.

Annual Census Estimates for July 1 are normally available in April of the following year, but only on a county basis (no census tract or block data are provided). Estimates also may be available from http://quickfacts.census.gov/qfd/states/17000.html.

Calculation of Population Served in January (the assumed reporting month): The prior year data will not be available at this time. To create a current estimate, take the county population of two years back and increase it linearly, reflecting history. Then adjust for proportion of service population to county population and number persons on private wells.

Residential Water Consumption

Any utility should have a breakout for all residential consumption (e.g., single family, apartments, group quarters). This number would include dormitories and penal institutions, but not facilities with transient residents, such as hotels. If the former are dominant, this number warrants further review. Also, bimonthly billing should be discouraged.

Indoor Water Demand

Indoor water demand should be the demand during the months of lowest consumption, which are usually the winter months of December, January and February.

To judge indoor consumption, one should calculate the monthly winter demand from water pumped to the system using residential billings and commercial billings. This data should be available for several years, and should be examined for aberrations. Billing data often is based on a 4 week meter reading cycle that can easily distort data. It is not always obvious where the extra week per quarter shows up. Water pumped data is date specific. Having all three data sets allows some judgment on data selection. Calculating the winter versus average ratio is the most reliable number for calculating indoor use.

The final per capita calculation is trivial; however, differences in 3% to 5% range should not be surprising.

Summary:

1. Population: Use Decennial Census data for accurate service population assessment. Update these numbers annually with either the U.S. Census or Regional Commission estimates.

2. Water Use: Use billing data for all residential uses on an annual basis to calculate year-round average monthly residential demand per capita.

   Calculate winter/ average monthly ratio for water pumped, residential and commercial accounts to judge data and select most appropriate data set. This selection will be system specific and should not be prescribed. This calculation also gives the outdoor demand as the difference between annual average and indoor demand. Ideally, both indoor and outdoor numbers should be reduced.